DOCUMENT RESUME

ED 094 753 IR 000 952

AUTHOR Borton, Terry; And Others
TITLE Dual Audio Television: The First Public Broadcast.
INSTITUTION Philadelphia School District, Pa. Office of Curriculum and Instruction.
PUB DATE 74
NOTE 19p.

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS *Audiences; *Commercial Television; *Educational Radio; Educational Television; Grade 2; Grade 3; Home Study; Low Income Groups; Negro Students; Programing (Broadcast); *Television Research
IDENTIFIERS *Dual Audio Television; Elementary Secondary Education Act Title III; ESEA Title III

ABSTRACT

A study was conducted in conjunction with the first public announced broadcast of dual audio television--a new method of combining simultaneous radio instruction and commercial entertainment TV. The study was designed to determine the audience which would be attracted to dual audio, the practicality of such instruction, and the correlation between number of days listened and scores on tests of material taught. The results of the study indicated that dual audio could attract 24% of the target age range children watching the TV show, that it was practical as far as the TV station and parents were concerned, and that there was a positive correlation between number of days listened and test scores. These results, confirming data collected in a number of previous studies indicate that dual audio is now sufficiently developed so that its effectiveness as a mass medium should be tested over a full broadcast season. (Author)

ED 094753

# Dual Audio Television:
# The First Public Broadcast

Terry Borton, Leonard Belasco, A. Rae Williams

BEST COPY AVAILABLE

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRO
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIGIN
ATING IT. POINTS OF VIEW OR OPINIONS
STATED DO NOT NECESSARILY REPRE
SENT OFFICIAL NATIONAL INSTITUTE OF
EDUCATION POSITION OR POLICY

Office of Curriculum
and Instruction
Board of Education
Philadelphia, Pa.

The Dual Audio Television Project
Studio and Office:
Stevens School
13th and Spring Garden Streets
Philadelphia, Pa. 19123

IR 000 952

# DUAL AUDIO TELEVISION
# THE FIRST PUBLIC BROADCAST[1]

Terry Borton, Leonard Belasco, A. Rae Williams
Office of Curriculum and Instruction
Board of Education, Philadelphia, Pennsylvania

Dual audio television instruction is a new method for helping children gain more educational benefit from the twenty-four hours of commercial entertainment television they watch in an average week. Dual audio consists of a simultaneous radio program which the children can listen to while they watch their favorite television programs. The dual audio narrator does not talk while the TV characters are talking or during commercials, but waits until there are pauses in the TV dialogue to make his comments. He uses the TV program material as examples for instruction in basic skills, particularly vocabulary development. For the child listening, the effect is of a bright and humorous older friend who is watching TV with him and helping him

[1] The research described in this study was made possible with funds received through Title III of the Elementary and Secondary Education Act. We wish to express our appreciation to WKBS-TV, Kaiser Broadcasting, and WUHY-FM for their help in broadcasting; to the staff members of the Wister, Spring Garden, Kearny, Jefferson, Holme, Mayfair, and Disston schools for their cooperation in data collection; to Ellery Pierson for help with data analysis; and, most especially to Stephen Baskerville for the warmth and energy with which he created the "voice" of dual audio.

understand it and learn from it.

This article describes a study done on the effects of the first publicly announced broadcast of dual audio television conducted in April of 1974, using vocabulary instruction designed to reach second and third grade, Black, low-income children, and accompanying the TV program Gilligan's Island.

## Review of the Literature

Prior to the publicly announced broadcast, a variety of studies explored the feasibility of dual audio in a number of different contexts. The first study (Borton, 1971) outlined the idea of dual audio, considered some of the possible problems of development and control, and reported on a preliminary test of the idea in which small groups of low-income White children watched short segments of commercial TV programs with and without dual audio in a simulated home-viewing situation. The TV programs were shown on a video tape recorder, and the dual audio was heard over a manually synched audio tape recorder. Those children who heard the dual audio made half as many mistakes on a test of the material taught as those who did not hear it.

A series of formative tests were conducted in a similar format by the Philadelphia Board of Education's Dual Audio Television Project when it was first established in 1971. The primary purpose of these tests, using both Black and White, and low and high income children, was to develop effective styles of dual audio narration, so that children would want to listen to dual audio and would learn from what

they heard. A Dual Audio Writer's Handbook was developed describing those methods of dual audio instruction which seemed most effective.

In the Spring of 1972, a one-month field experiment was conducted using 70 low-income Black children, some of whom watched the TV cartoon Astro-Boy as they usually did on a regular UHF channel, and some of whom could also hear dual audio on small fix-tuned FM receivers loaned to them during the broadcast period (Borton, Belasco, and Baskerville, 1974). Both groups of children were monitored by their parents who wrote down verbatim what they said and did during the broadcast. The dual audio group listened to dual audio an average of 83% of the time they were watching the TV program, and this group also performed significantly higher on tests of the material taught than did the control group.

In the Spring of 1973, a two-month field experiment was conducted using a sample of 400 low-income Black children, with dual audio commentary provided for the TV cartoon Spiderman (Borton, Belasco, and Echewa, in press). Four treatment groups were involved: one that simply watched the TV show as they normally would without knowledge of dual audio; one that received a little booklet describing for parents how to do dual audio for their children, together with bi-weekly leaflets telling them the words being taught by the dual audio announcer; one that was loaned fix-tuned FM receivers, replicating the group in the previous experiment; and one that was notified about the dual audio program and encouraged to listen on their own FM radios, which an earlier survey had indicated were available in 79% of the children's homes. Amount of listening was determined by calling the homes of all children every two weeks during the time the TV

program was on the air. Those children who were loaned the fix-tuned radios listened an average of 78% of the time they were watching the program; those who used their own radios listened an average of 46% of the time. There was virtually no usage of the booklet. Those children who listened on their own radios performed significantly better than all other groups on tests of the material taught. The results seemed to indicate that although providing the fix-tuned radios produces a greater amount of listening, the use of radios already in the children's homes would be a feasible way of operating a dual audio system on a mass scale.

During the Fall of 1973, another series of formative tests were conducted to try to increase the effectiveness of the dual audio instruction. The formative testing suggested that it was most effective to teach words which were just above the child's level of oral comprehension, which were concrete objects rather than abstracts, which were used in the TV program itself, and which had strong visual referents in the TV program. Teaching two words a half-hour was more effective than trying to teach more, and using at least three explicit definitions for the words seemed to be necessary in order for the children to grasp them.

## Design and Objectives of the Study

The present study was designed to test the feasibility of dual audio under the actual conditions of publicly announced broadcasting. Originally scheduled to be a one or two month test in the Winter, the broadcast had to be cut back to two weeks in the Spring because of various logistical factors, but the television, radio,

and educational parties involved in the test felt that two weeks would be sufficient to provide adequate information for a decision about whether dual audio would be feasible on a continuing mass basis in the future.

The present study was composed of two parts, one of which will be summarized briefly, and the other described in some detail.

1. Audience Rating. An estimate of the dual audio audience for the Philadelphia Metropolitan Area was obtained by the American Research Bureau (ARB), an independent television and radio audience rating service. Samples were based on a systematic interval random selection of 1160 people from Philadelphia Area residential telephone numbers according to normal ARB procedures; protocols were designed to obtain information on what TV station the respondents were watching at the time Gilligan was on the air, and, if they were watching Gilligan, what radio station they were listening to, as well as certain demographic data. (For a detailed report, see American Research Bureau, 1974.) Estimates of dual audio audience size from this two week test were designed to serve as the basis for estimates of the kind of audience which a longer dual audio broadcast might be able to draw.

2. Practicality and Material Learned. To determine the practicality and the educational effects of the instruction, the authors conducted a field experiment which was entirely separate from the ARB study, and which had the following objectives and hypotheses.

a. Practicality. Objective: To ascertain the practicality of conducting dual audio television publicly. Of obvious practical concern before a long range dual audio program could be developed were such questions as whether dual audio could be broadcast without undue demands on the time of the TV station personnel, what effect

dual audio would have on the regular TV audience, and how parents would respond.

b. Material Learned. Objective: To ascertain the relationship between the amount that children listened and their scores on a test of the material taught.

It is hypothesized that there is a positive and significant linear correlation between the number of days listened to dual audio and scores on the test of material taught for both sexes, all grade groups, and Title I and non-Title I groups, regardless of previous vocabulary knowledge. (If a positive linear correlation were established between number of days listened and test score, the implication would be that the more a child listened to dual audio programming, the more material he would learn.)

## Sample

Representative samples were selected from Title I (37% or more children from families on welfare) and non-Title I schools in the following manner. Four Title I schools with an average of 82% of the children from families on welfare were selected from schools in District 3 of Philadelphia (an inner-city district) because they were within the fifth stanine of Philadelphia Title I schools on the vocabulary scale of the California Achievement Test, were approximately the same size, and were almost entirely Black. Three non-Title I schools with an average of 12% of the children from families on welfare were selected from District 8 of Philadelphia (a middle income, predominately White district) because they were representative of that district in terms of their California Achievement Test

vocabulary scores, and, according to the District Superintendent, also representative in demographic characteristics such as ethnicity and education of parents.

Once the schools were selected, the names and phone numbers of all children in the Title I second through fifth grades, and in the non-Title I second and third grades were collected (N=1108). Before the dual audio broadcasts began or any publicity was released about the program, all the children's homes were phoned during the time Gilligan's Island was broadcast and a parent or sibling asked what TV program the child was watching or usually watched at that time. Of those successfully reached on the first completed call (N=612), all who said they usually watched or were actually watching Gilligan (N=289) constituted the study sample. During the course of broadcasting, 27 were lost from the sample, either because their phones were disconnected, or because they were not available for testing after the broadcasts.

The final sample then consisted of 262 children, divided into subgroups: Fifty-six Title I second and third graders from Black inner-city schools represented the target audience to which the dual audio broadcast instruction was specifically tailored. In addition, data were collected for a group of fourth and fifth grade Title I students (N=44) and a group of non-Title I second and third graders (N=162) to assess the effects of dual audio on these other groups of interest.

## Treatment Conditions

Dual audio television was broadcast week days on WUHY-FM from April 15 to April 26, 1974 between 5:30 and 6:00 to accompany

Gilligan's Island on WKBS-TV. Letters were sent home to parents of all first through sixth graders in the Philadelphia School System informing them about the broadcasts, but unfortunately most of these letters did not go out until the fourth day of broadcasting. Articles appeared in the major city newspapers, and there were news stories on several TV and radio stations. A short promotional was run on the TV the week before the broadcast during Gilligan. Beginning on April 15th, a one minute promotional appeared on the TV just before Gilligan in which "Steve," the dual audio narrator, told the children about the "cool new radio program" and showed them how to tune it in on a portable AM-FM radio.

The dual audio scripts were written by the Dual Audio Television Project of the Philadelphia School Board's Office of Curriculum and Instruction, and incorporated the approaches which formative testing during the year had suggested would lead to more effective dual audio instruction. The instruction was in basic vocabulary which was pretested on the target audience of Title I second and third graders to make sure it was just above their oral comprehension level. In general, the words used appeared three or more times in the TV program itself, were in the 2,000 - 10,000 range in the Word Frequency Book (Carroll, 1971), had visual referents in the TV show, and were likely to be important in the child's home, school, or TV world. The words taught were: treasure, rescue, loyal, reward, ration, imagine, invention, accuse, attractive, superstition, romantic, witness, investigate, construct, surf, bribe, experiment, missile, women's liberation, and native.

Most words were taught with at least three explicit definitions,

and ten implicit definitions. The definitions were derived both from a dictionary and from the definitions of slightly older children in other Title I schools, so that the language would be familiar to the target audience.

In addition to the focus on these vocabulary items, the narrator, "Steve," explained other words in passing, cracked jokes, made funny noises, sang with the theme song, made references to topical subjects, and generally tried to present himself as a warm, funny, and understanding friend who enjoyed watching Gilligan and helping kids learn from it.

The dual audio was broadcast live from the radio station as "Steve" watched the TV program on a monitor in the studio. His script was provided with cues so that he would know when to speak without interrupting the program. The children could hear the Gilligan sound track from the TV monitor in the background of their radio audio, and this served as a locator to find the radio station when "Steve" was not speaking. Soft music was played during the commercials, with an occasional voice-over announcing that "Steve will be right back," but no other commentary was presented during commercial breaks.

To receive the dual audio programming, it was necessary for the child to have an FM radio at home which was functioning, which was close enough to the TV to be coordinated with it, and which the child was allowed to use. No pressure to listen to the program was placed on the children; the only inducement was that provided by the TV promotionals and the letter to parents. The weather, unfortunately for the purposes of the test, changed from miserable before the test to sunny throughout the two weeks, with the opportunity to go outside

and play increased by the unusually early institution of day light savings time due to the energy crisis.

The basic treatment condition then was the broadcast of publicly announced dual audio television to an audience of children who could listen if they had an FM radio and wished to use it.

## Dependent Variables and Measures

In order to measure the practicality of dual audio, a variety of measures was used. The amount of extra work involved by the TV station was determined through an interview with the station manager. The effect on the TV station's regular audience was measured through calls and letters fo the TV station. The response of parents who had children listening was ascertained through a phone interview with a random sample of twenty parents of Title I children, conducted two weeks after the broadcasts had terminated.

In order to correlate the number of days a child listened to dual audio with material learned, measures of both were needed. The number out of the ten broadcast days which a child actually listened to dual audio was determined on the basis of three indices. (1) Monitors called each family once a week during the time Gilligan was on the air and asked what TV program the child was watching, whether the radio was on, and, if so, what radio program was being listened to. Monitors were trained by the Project staff in role-play sessions, and monitoring forms were designed to make it difficult for either the monitor or the respondee to give inaccurate information. (2) In the week following the dual audio broadcast, a separate estimate of the number of times the child had listened was obtained from the parent. (3) A similar estimate was obtained from the child at the

time of testing. These three scores -- monitored listening, parent estimate, and child estimate -- were then combined into one final estimate of number of days listened according to a set of rules which were designed to make the estimate conservative. For instance, even if the monitor marked the child as having listened, the child was marked as a "0" or "non-listener" if he himself said that he never listened and the tester had confidence in this response.

The measure of material learned was an individually administered oral test of the 20 vocabulary items taught on dual audio. The words were spoken twice without context, and repeated if the child did not understand what was being said. The questions were in the form, "Can you tell me what _____ means?" Testers were trained by the staff and provided with lists of correct answers; any responses about which they were uncertain were written down verbatim and then reviewed by the study staff in order to determine a final score. Tests were scored by number right, from zero to twenty, and all children were asked all items.

Previous knowledge of vocabulary was determined by scores on the vocabulary subsection of the California Achievement Test (CAT) given to students approximately five months before the start of the broadcast. Unfortunately, this measure was not available for 10 of the 56 Title I second and third graders; for 2 of the 44 Title I fourth and fifth graders; and for 93 of the 162 non-Title I second and third graders. Correlations which partialed out previous vocabulary knowledge thus had to be made on a smaller sample than other analyses

## Statistical Analysis

In order to test for the correlation between listening rate and scores on tests of material taught, an overall Pearson's correlation was first computed for each group, and then the effects of previous vocabulary knowledge and sex were partialed out. The Statistical Analysis System computer package was used for analysis. A .05 level was set as significant.

## Results

1. Audience Rating. The American Research Bureau reported that in the dual audio target age range of 6-11 year olds, 24% of the children watching Gilligan in the Philadelphia Metropolitan Area were listening to dual audio. There was a total dual audio audience of 20,520 persons, or 13% of the 119,967 persons of all ages watching Gilligan. In the City of Philadelphia, where the majority of low-income Black children live, the percentage of 6-11 year olds listening to dual audio was slightly higher than in the Metropolitan Area, 25%, and the total dual audio audience was %25 higher than that of The Electric Company which was on TV at the same time.

The dual audio audience was about evenly divided by sex (48% male, 52% female). Sixty-seven percent had not listened to the dual audio radio station, except for dual audio, during the previous six months.

2a. Practicality. According to the station manager of WKBS-TV, no undue complications were created for the TV station as a result of dual audio. There were some difficulties in arranging for the use

of the Gilligan films, but these could probably be forestalled in a longer test. Preparation of the promotional spots was accomplished in a three hour session which the station contributed to the project; the only other complication was a call each day to determine exactly how the scheduled film had been edited for broadcast, so that the dual audio script could be altered accordingly.

No negative phone calls were received at the TV station complaining about the program; approximately half a dozen positive calls were received. Seventy-six letters were sent to the TV station about the program. Of these, 75 were positive; the one negative letter was from two children who were too old for the program but watched it because their teacher made them. Typical positive comments were:

> "When you are on the radio with Gilligan's Island it makes the show more interesting and has an educational drive for the children in grades one through five. It also gives the parents a chance to go over the words and their meanings from the show with their children. I am the mother of one, a little girl and one on the way, my little girl just loves the show and to listen to you." (Parent)
>
> "You're really groovy on the radio. When we watch TV Gilligan's Island. I always turn you on with the program, you turn me on. I've learned a lot of words and what they mean from you. In fact I've learned a lot from you. Sorry to hear that you're leaving soon. I hope you'll come back on the radio soon. See ya then! Your number 1 fan." (Child)
>
> "My name is Gail Doren and I am 11 years old. I really enjoyed your radio program better than anything I have ever seen. I especially enjoyed singing the Gilligan's

Island song with you at the beginning of the show."

"My name is Nancy James. I'm eight years old. I am in the third grade. I think watching Gilligan's Island is much funner to see with your new idea. I wish that you would not stop your new idea in two weeks. Because if you stop I won't think too much while watching Gilligan's Island."

Parental reactions were obtained from twenty parents selected from the Title I listeners. Parental involvement was an important aspect of the child listening, as 75% of the parents said that they had helped the child tune in the dual audio program. Only one parent said that anyone had been bothered by the dual audio, her reason being that "it ran up the electric bill." Sixty-five percent thought that the dual audio was teaching the words thoroughly enough for their child to learn them, and 90% reported more than one person listening. All thought that dual audio was "a good idea." Typical comments were: "They enjoyed it." "The kids like the company. It's like having older brothers or sisters." "Kids don't get everything out of the TV. This breaks it down for them." "It makes a good show out of a re-run."

2b. Material Learned. Figure 1 indicates the average percent of test items correct per student by days listened for each of the three groups.

---

Insert Figure 1 about here

---

For the target group, Title I second and third graders ($N$=56), the correlation between listening rate and test score was .64. For the Title I fourth and fifth graders ($N$=44) the correlation was .50. For the non-Title I second and third graders ($N$=162) the correlation was .30.

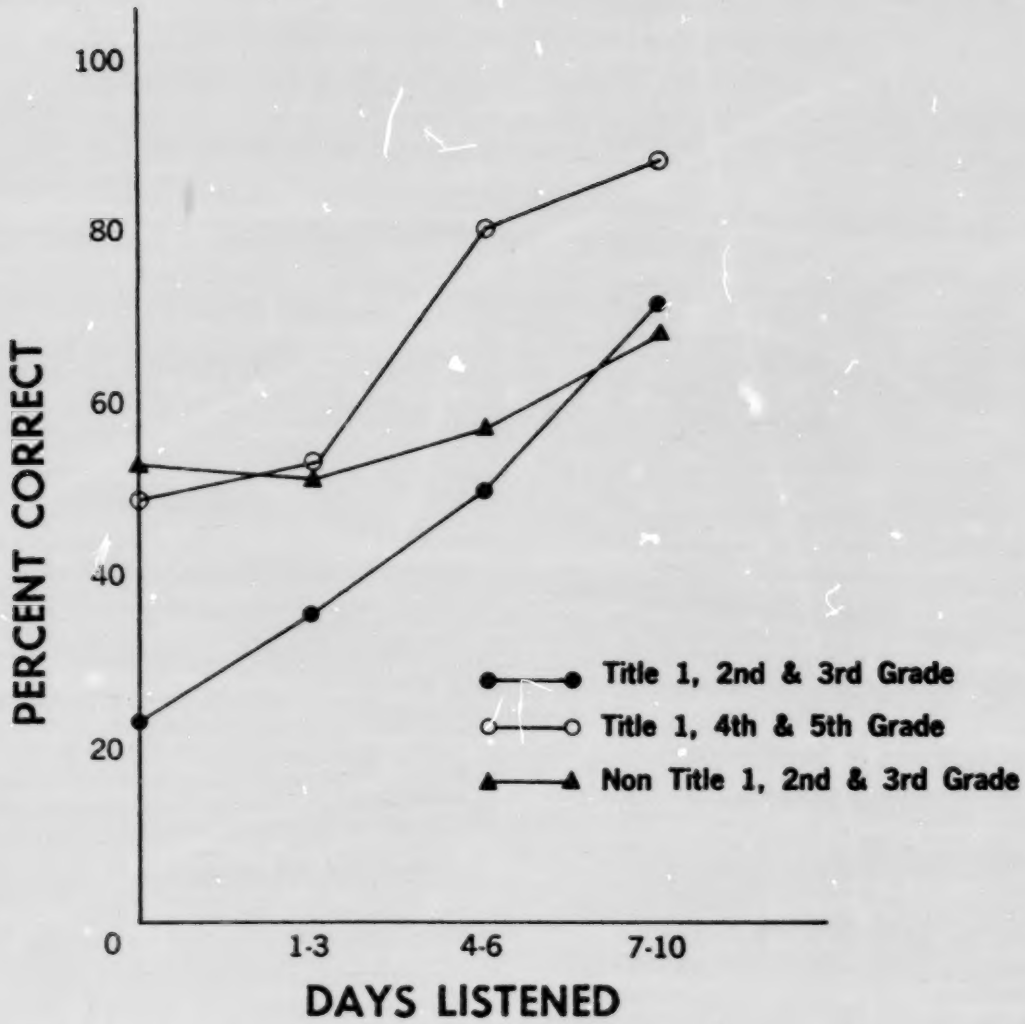


Figure 1: Percent of Items Correct by Days Listened

All correlations were significant at the .01 level. Title I second and third graders, who showed the greatest gains, increased their scores by an average of 5% (equivalent to one word) for each day listened.

With scores on the CAT vocabulary subtest partialed out, the correlation for the Title I second and third graders ($N$=46) was .61; for the Title I fourth and fifth graders ($N$=42), .49, both significant at the .01 level. For non-Title I second and third graders ($N$=70), the correlation was .01 which was not significant.

There was no significant correlation between sex and test score in any group.

The hypothesis that there is a positive and significant linear correlation between the number of days listened to dual audio and scores on tests of material taught for both sexes, all grade groups, and Title I and non-Title I children, regardless of previous vocabulary knowledge, was confirmed except for the non-Title I second and third graders where the correlation was not significant when previous CAT vocabulary score was accounted for.

## Limitations of the Study

Probably the most important limitation of the study was that it was conducted in the Spring rather than in the Winter when TV audiences would have been larger and more involved. This makes it more difficult to generalize these results to a Winter schedule, but the effect is probably to make projections conservative. The short, two week broadcast made it difficult to control for possible Hawthorne effects. Since previous studies had indicated that vocabulary learning gains from TV watching alone were negligible, possible confounding effects

between Gilligan's Island watching and dual audio listening were not controlled. Lack of a true random sample limits generalizability, and the use of program-specific tests does not provide information which would predict what effect long-term broadcast of dual audio might show on standardized instruments.

## Summary and Conclusions

A study was conducted in conjunction with the first publicly announced broadcast of dual audio television, a new method of combining simultaneous radio instruction and commercial entertainment TV. The study was designed to determine the audience which would be attracted to dual audio, the practicality of such instruction, and the correlation between number of days listened and scores on tests of material taught. The results of the study indicated that dual audio could attract 24% of the target age range children watching the TV show, that it was practical as far as the TV station and parents were concerned, and that there was a positive correlation between number of days listened and test scores. These results, confirming data collected in a number of previous studies, indicate that dual audio is now sufficiently developed so that its effectiveness as a mass medium should be tested over a full broadcast season.

## References

American Research Bureau. An arbitron special survey measuring the dual audio television audience in the Philadelphia, Pennsylvania area. Beltsville, Md., 1974.

Borton, T. Dual audio television. Harvard Educational Review, 41, Feb., 1971, 64-78.

Borton, T., Belasco, L., and Baskerville, S. Broadcasting dual audio television. In P. Klinge.(Ed.) American Education in the Electric Age. Englewood Cliffs, N.J.: Educational Technology Publications, 1974.

Borton, T., Belasco, L., and Echewa, T. Dual audio television: A broadcast simulation. AV Communication Review, in press.

Carroll, J. et al. Word Frequency Book. New York: American Heritage Publishing Co., 1971.